

Title (en)
Bubble driven micropump

Title (de)
Gasblasenmikropumpe

Title (fr)
Micropompe à bulles de gaz

Publication
EP 1439307 A1 20040721 (EN)

Application
EP 04250155 A 20040114

Priority
KR 20030002727 A 20030115

Abstract (en)
A micro-pump driven by the phase change of a fluid is provided. The micro-pump includes a pumping chamber which has a predetermined inner space so that it can be filled with a fluid; at least one fluid entrance and at least one fluid exit which are connected to the pumping chamber; a heating element which is provided at one side of the pumping chamber to generate bubbles in the pumping chamber by heating the fluid; and electrodes which apply current to the heating element. Here, the fluid is made to flow into or flow out of the pumping chamber due to expansion and contraction of the bubbles, and the cross-sectional area of at least one of the fluid entrance and the fluid exit varies along a direction where the fluid flows. <IMAGE>

IPC 1-7
F04B 19/00; **F04B 53/10**; **F04B 43/00**; **B41J 2/14**; **B41J 2/16**

IPC 8 full level
B81B 3/00 (2006.01); **F04B 19/00** (2006.01); **F04B 19/24** (2006.01); **F04B 43/00** (2006.01); **F04B 43/04** (2006.01); **F04B 53/10** (2006.01); **F04F 1/16** (2006.01)

CPC (source: EP KR US)
F04B 19/006 (2013.01 - EP KR US); **F04B 19/24** (2013.01 - EP KR US); **F04B 43/0027** (2013.01 - EP US); **F04B 53/08** (2013.01 - KR); **F04B 53/1077** (2013.01 - EP US); **F05B 2210/11** (2013.01 - KR); **Y10S 417/00** (2013.01 - KR)

Citation (search report)
• [XY] EP 0816089 A2 19980107 - CANON KK [JP]
• [X] EP 1057639 A2 20001206 - CANON KK [JP]
• [Y] DE 4422743 A1 19960104 - GERLACH TORSTEN [DE]
• [X] EP 0721843 A2 19960717 - CANON KK [JP]
• [X] EP 0251664 A1 19880107 - OKAYASU KENJI
• [XP] EP 1283109 A2 20030212 - CANON KK [JP]

Cited by
CN101975154A; CN101975153A; CN109139433A; EP1815992A3; CN109139406A

Designated contracting state (EPC)
DE FR GB

DOCDB simple family (publication)
EP 1439307 A1 20040721; **EP 1439307 B1 20070328**; DE 602004005506 D1 20070510; DE 602004005506 T2 20080124; JP 2004218644 A 20040805; KR 100499141 B1 20050704; KR 20040065647 A 20040723; US 2004146409 A1 20040729

DOCDB simple family (application)
EP 04250155 A 20040114; DE 602004005506 T 20040114; JP 2004008463 A 20040115; KR 20030002727 A 20030115; US 75739204 A 20040115